

**NAME**

SSL\_set\_bio, SSL\_set0\_rbio, SSL\_set0\_wbio - connect the SSL object with a BIO

**SYNOPSIS**

```
#include <openssl/ssl.h>
```

```
void SSL_set_bio(SSL *ssl, BIO *rbio, BIO *wbio);  
void SSL_set0_rbio(SSL *s, BIO *rbio);  
void SSL_set0_wbio(SSL *s, BIO *wbio);
```

**DESCRIPTION**

**SSL\_set0\_rbio()** connects the BIO **rbio** for the read operations of the **ssl** object. The SSL engine inherits the behaviour of **rbio**. If the BIO is nonblocking then the **ssl** object will also have nonblocking behaviour. This function transfers ownership of **rbio** to **ssl**. It will be automatically freed using **BIO\_free\_all(3)** when the **ssl** is freed. On calling this function, any existing **rbio** that was previously set will also be freed via a call to **BIO\_free\_all(3)** (this includes the case where the **rbio** is set to the same value as previously).

**SSL\_set0\_wbio()** works in the same as **SSL\_set0\_rbio()** except that it connects the BIO **wbio** for the write operations of the **ssl** object. Note that if the **rbio** and **wbio** are the same then **SSL\_set0\_rbio()** and **SSL\_set0\_wbio()** each take ownership of one reference. Therefore, it may be necessary to increment the number of references available using **BIO\_up\_ref(3)** before calling the set0 functions.

**SSL\_set\_bio()** is similar to **SSL\_set0\_rbio()** and **SSL\_set0\_wbio()** except that it connects both the **rbio** and the **wbio** at the same time, and transfers the ownership of **rbio** and **wbio** to **ssl** according to the following set of rules:

- ⊕ If neither the **rbio** or **wbio** have changed from their previous values then nothing is done.
- ⊕ If the **rbio** and **wbio** parameters are different and both are different to their previously set values then one reference is consumed for the **rbio** and one reference is consumed for the **wbio**.
- ⊕ If the **rbio** and **wbio** parameters are the same and the **rbio** is not the same as the previously set value then one reference is consumed.
- ⊕ If the **rbio** and **wbio** parameters are the same and the **rbio** is the same as the previously set value, then no additional references are consumed.
- ⊕ If the **rbio** and **wbio** parameters are different and the **rbio** is the same as the previously set value then one reference is consumed for the **wbio** and no references are consumed for the **rbio**.

- ⊕ If the **rbio** and **wbio** parameters are different and the **wbio** is the same as the previously set value and the old **rbio** and **wbio** values were the same as each other then one reference is consumed for the **rbio** and no references are consumed for the **wbio**.
- ⊕ If the **rbio** and **wbio** parameters are different and the **wbio** is the same as the previously set value and the old **rbio** and **wbio** values were different to each other, then one reference is consumed for the **rbio** and one reference is consumed for the **wbio**.

Because of this complexity, this function should be avoided; use **SSL\_set0\_rbio()** and **SSL\_set0\_wbio()** instead.

## RETURN VALUES

**SSL\_set\_bio()**, **SSL\_set0\_rbio()** and **SSL\_set0\_wbio()** cannot fail.

## SEE ALSO

**SSL\_get\_rbio(3)**, **SSL\_connect(3)**, **SSL\_accept(3)**, **SSL\_shutdown(3)**, **ssl(7)**, **bio(7)**

## HISTORY

**SSL\_set0\_rbio()** and **SSL\_set0\_wbio()** were added in OpenSSL 1.1.0.

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